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ABSTRACT

More emphasis should be placed on the use of simple curriculum models for structuring instructional planning programs and for developing program planning skills during preservice or inservice education courses in order to continue to upgrade the contribution of geography to the secondary school curriculum. A five-stage model for planning geography programs is presented in this paper. The first two stages are concerned with the collection of data about the education system and the school for which the program is being produced. The third stage is an analysis of the syllabus, and the fourth is concerned with the preparation of instructional units. The fifth stage concerns the evaluation of students' progress during the year and the effectiveness of the units in achieving the aims and objectives of the course. A number of figures appear throughout the paper and a 30-item list of references is included. (DB)

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Improving Geography Teaching through Program Planning: An Approach to Pre-service and In-service Education. *

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1. Introduction

In the last twenty years parents, and the society to which they belong, have increased their expectations of the role of teachers in the community and in the education system. To a large extent this increase in parents' expectations has become a cyclical process created by better educated and more professional teachers who have raised the general educational standards of the community. They have been assisted in this process by technological advances in communications, exemplified by national and international coverage of events, often as they occur, by radio and television; by the storage and processing of rapidly increasing banks of factual information using computers; and by the many interesting multi-media educational packages available for use in the home.

Concerned parents today, who are becoming increasingly involved in the decision making process of curriculum development, have higher expectations of secondary school teachers and, whether they are beginning teachers or more experienced heads of departments, expect them to be able to explicate the contribution of their subject to the school curriculum; to have a thorough knowledge of the content and research methods of the subjects they teach; to keep themselves up to date by attending in-service courses, professional association meetings, and obtaining higher qualifications, so that the facts, concepts and generalisations studied by students are not irrelevant or obsolete; and to be able to analyse students' abilities and to cater for individual differences so that students can reach their educational potential and develop an objective and

* This paper was presented at the International Geographical Union Regional Conference held in Beijing, China from August 13-19, 1990.

enquiry approach to knowledge.

Because knowledge is changing rapidly, and the needs of students and society also are changing, many teachers, who have completed in-service and/or higher qualification courses concerned with curriculum theory and practice, are agitating for the removal of prescribed syllabuses and externally marked annual examinations. Such teachers contend that these should be replaced by school-based developed courses with internal assessment and evaluation. However, a progression from prescribed syllabuses to school-based curriculum courses places many additional responsibilities on teachers, usually without a reduction in their classroom hours, because they have to be aware of the changing perceptions, or bases, of their subject, which are important when considering the subject's special contribution to the general educational process, and the manner in which it provides a supportive or integrative contribution across the curriculum. If the teacher has not thought about these matters, and has not evolved a coherent outlook of the nature of knowledge and the place of the subject in the curriculum, pressures for new courses could lead to the subject being discounted in an evolving school situation (Biddle, 1978; Hall, 1982; Kent, 1985; King, 1985; Bailey, 1986; Gerber & Fien, 1988).

2. Implications for Geography Teachers.

All of these issues are important, particularly for geography teachers, because many parents' perception of geography and of geographical education are erroneous, or obsolete, for they are not aware of the modern developments in these areas of research after they completed their secondary schooling. This has led to the co-ordination of the activities of professional geography associations in Australia, United Kingdom and USA in their efforts to enlighten parents and politicians of the essential contribution geography can make to every person's general education. The publications produced by these associations should be compulsory reading for all university geography students and teachers since they provide supportive arguments for maintaining geography in the school curriculum. These arguments must be passed on by geography

teachers and university lecturers and professors to parents and decision makers concerned with formulating the school curriculum (Bailey & Binns, 1987; Natoli et al, 1987; Biddle, 1989).

This introduction provides background information which supports the proposition that more emphasis has to be placed on the use of simple curriculum models for structuring instructional planning programs and for developing program planning skills during pre-service or in-service education courses in order to continue to upgrade the contribution of geography to the secondary school curriculum.

3. Planning Programs in Geography in the Secondary School.

The effective planning of programs is a complex process with or without the existence of a formal or official curriculum. There are isolated cases only of education systems where the process of school-based curriculum development has been implemented completely, because teachers are required to do too many hours of classroom teaching to be effective curriculum developers. Few systems have the finances to reduce these hours to allow time for curriculum development and to provide study leave to teachers, at various intervals, to update their knowledge in their subject and in curriculum theory and practice. Consequently, most secondary school teachers are provided with a formal geography syllabus which may be prescriptive, or merely provide broad and flexible guidelines, from which they are expected to prepare instructional programs suitable for the age and ability levels of their students. It is obvious that the more flexible the guidelines the nearer we get to school-based curriculum development and the greater the responsibilities for teachers when constructing classroom programs, assessing students' progress, and evaluating the effectiveness of their geography courses.

The benefits for students and teachers of a system for planning programs is that the course can be covered effectively for students. Planning enables the teacher to achieve this goal by ensuring that an efficient use is made of the time available; by providing an overview of the course for a term, semester or year it suggests time limitations for each topic or units of study, and allows time to collect resources; by drawing attention to the variety of course

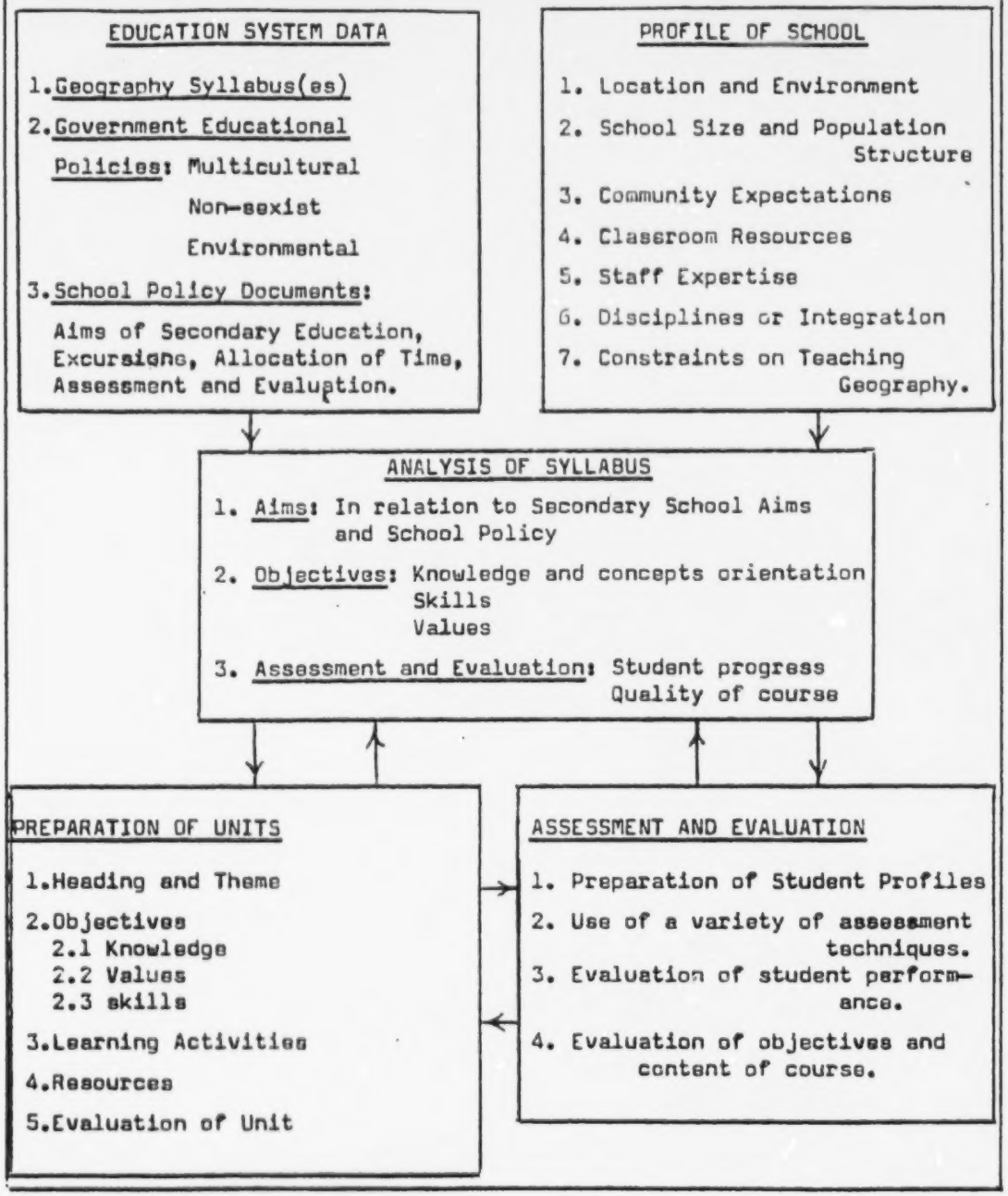
objectives and the need to develop matrices to prevent neglect of ecus . objectives; and by focussing on the aims and objectives which have to be translated into instructional units to be implemented effectively.

The principles for planning programs enunciated in this paper are based on the assumption that the teacher has a formal syllabus which has flexible guidelines but these principles may be used also, with some modifications, with a prescriptive syllabus. It also is contended that curriculum models can provide suitable structures for designing geography programs.

4. Curriculum Models as Structures for Planning Programs.

There are two major types of curriculum models which are differentiated by emphases on goal-oriented behaviour or on the process of teacher-learning activities. Goal-oriented models usually are easier for inexperienced teachers to understand and implement because they refer to the achievement of specific learning goals which can be easily tested to see if the student has achieved that goal. Experienced teachers, however, often feel more relaxed with process oriented models particularly if they are interested in encouraging students to be creative; to express their value position; to describe their own perceptions; or to use lateral thinking skills. The thoughtful teacher, of course, will use either approach to planning with the decision depending on the nature of the learning situation or whether he/she wishes to emphasise understanding of knowledge and skills or of the processes of acquiring knowledge and skills. Since this paper is concerned with pre-service education, or in-service education for teachers, without expertise in curriculum theory and practice, a simplified model is used to provide a structure for planning geography programs (see Fig. 1) and the emphasis is on goal-oriented units in the program. If you are interested in other approaches to goal-oriented and process-oriented instructional programs reference should be made to Biddle (1976,1979, 1982), Graves (1979,1980), Bartlett & Cox (1982), Fien (1984), Naish et al (1987) and Conolly (1988).

Fig. 1. A MODEL FOR PLANNING GEOGRAPHY PROGRAMS



5. A Model for Planning Geography Programs

There are five stages in this model for planning geography programs. The first two are concerned with the collection of data about the education system and the school for which the program is being produced. The third stage is an analysis of the syllabus to provide the purpose of the geography course and the time constraints on the treatment of instructional units which make up the fourth stage. The fifth stage concerns the evaluation of students' progress during the year and the effectiveness of the units in achieving the aims and objectives of the course.

5.1 Education System Data: On appointment to a school the beginning teacher usually receives assistance from the Head of Department but he or she will have little understanding of the teaching situation until the syllabus documents have been collected and read thoroughly.

The second important task is to examine the Government's educational policies which impinge on the selection of topics to be introduced from the syllabus(es). In Australia important policies, which have to be implemented through all syllabuses, wherever appropriate, are those on aboriginal education, non-sexist education, multicultural education, mass media education, and environmental education.

The third task at this introductory stage is to read and note the information in the school policy documents. In an efficiently run school the beginning teacher would be provided with copies of these documents, but in many schools limited copies exist in the care of various school executives. It is essential for the geography teacher to ascertain the school policy, for example on excursions, for in some schools the policy requires long-term planning and, in all cases, excursions to be effective require more detailed planning than normal lessons.

5.2 Profile of the School: Investigating the profile of the school is another important exercise for the geography teacher. If the school is located in a rural environment the usual decision is to select an agricultural topic in order to take the students from the known to the unknown. However, a beginning teacher who lacked confidence in his/her ability to discuss rural topics with students

familiar with this environment may prefer to commence with the kind of environment with which he/she was familiar e.g. manufacturing or service industries.

The school size often has a bearing on staff attitudes to excursions and the population structure may influence the regional examples selected to implement the multicultural education policy.

Classroom resources and staff expertise often affects the types of units a beginning teacher has to prepare. Most geography departments' staff share the units they prepare with copies frequently kept in an efficient filing system in a resource centre.

It is easier, generally, for the geography teacher to prepare units based on a disciplinary approach but, in most junior high schools today, there is a tendency to have integrated social science courses on the home country. This requires cooperation and a positive approach, by the geography teacher, to the development of interesting topics for the students.

5.3 Analysis of Syllabus(es): Before analysing the syllabus(es) the teacher must consider the general aims of secondary education for the system in which he/she is employed. In some education systems the general aims are content-centred, but the trend is towards aims of education concerned with the personal development of students. For example, one education system in Australia supports the view that:

> "The central aim of education, which, with home and community, the school pursues is
> to guide individual development
> in the context of society
> through recognisable stages of development
> towards perceptive understanding, mature judgement,
> responsible self-direction and moral autonomy."
>
> (NSW Department of Education, 1988).

It is not surprising therefore, to find that the aims of the Geography Syllabus are student-centred and the teacher must respond by frequently including student-centred learning activities in the program.

In a prescriptive geography syllabus the areal and systematic studies are identified and teachers merely collect the resources

required to achieve the prescribed objectives related to the understanding of concepts, the development of skills, and the identification, clarification and development of values. In a flexible syllabus a matrix for knowledge can be prepared to fit in with the particular aims of the syllabus or of the school. A similar matrix can be formulated for concepts although most of the concepts important for geographical understanding are common to all geography syllabuses. Matrices also can be produced for the development of skills, values education, learning/teaching strategies and resource materials. All of these matrices provide an essential resource and check list for teachers planning programs and they prevent the teacher neglecting aspects of the course particularly when the program covers two or more years. For this reason matrices are included in this paper which all geography teachers can use as a foundation on which they can build when preparing their programs. (see Figs. 2 - 7).

A prescriptive syllabus is accompanied in most cases by a specimen examination paper in which the questions illustrate how the objectives of the course will be assessed and evaluated. Being an external examination there are limitations on the objectives which can be evaluated and the emphasis is on knowledge of concepts and factual information and on development of skills. A flexible syllabus allows the geography teacher to introduce a greater variety of assessment techniques and to gain a more balanced view of the student's achievement of the course objectives.

6. Preparation of Units

All that is required in a program is a summary of the essential features of each of the units which are combined to make up a term or annual program. In a school this usually is a team effort, after the geography staff have discussed the education system's requirements, the profile of the school, and have analysed the syllabuses. This approach can be implemented in a pre-service education group of students. After group discussion each student can prepare a program for a term or a year by summarising the units. This can be followed up by the student completing a specific unit containing most of the information required to organise lessons.

Fig. 2: Matrix of Themes, Regions and/or Case Studies

Continents	Themes Regions and/or Case Studies	Time Allocation Units							
East Asia									
South Asia									
North America									
South America									
Australasia									
Africa									
Europe									

Fig. 3: Matrix of Organising Concepts

No.	Concepts	Time Allocation Units
1.	Location	
2.	Scale	
3.	Distribution	
4.	Association	
5.	Distance	
6.	Movement	
7.	Energy	
8.	Change through time	
9.	Community	
10.	Culture	
11.	Multicultural Society	
12.	Direction	
13.	Environment	
14.	Interaction	
15.	Region	
16.	Resources	
17.	Sense of Place	
18.	Systems	
19.	Social and Economic Structures	
20.	Environmental Perception	
21.	Work and Leisure	
22.	Spatial Justice	
23.	Land rent	

Ref: McCaskill, 1977; SSB, 1984.

Fig. 4: Matrix of Skills

No	Skills			Time Allocation (Units)							
1	Use in all Units	Thinking Skills	Initiating Inquiry-Identifying Question.								
2			Observation and Perception								
3			Data Collecting and Recording								
4			Interpretation, Analysis & Synthesis								
5			Evaluation								
6			Prediction								
7			Decision Making								
8		Social Skills	Listening								
9			Courteous Response to Questions								
10			Planning with Others								
11			Contributes to Group Projects								
12			Helping Others								
13			Working Independently								
14			Valuing								
15			Communicating								
16	Practical Skills		Mapping								
17			Field Studies								
18			Measurement and Calculations								
19			Statistical Techniques								
20			Obtaining Information from/using Visuals								
21			Reading Journals, Graphs, Computer Output								
22			Writing Reports and Essays								
23			Interpreting Theoretical Models								

Ref: Modified NGCC, 1978.

Fig. 5: Matrix of Values - Core and Processes of Development

No.	Values	Time Allocation Units							
1	Develop a sense of objectivity in inquiries on issues about resources and land use management.								
2	Enjoy and respond to the environment and feel responsible for its conservation.								
3	Develop an informed concern for the total environment and the need for individuals to cooperate in the maintenance and improvement of its quality.								
4	Demonstrate an interest in, and a concern for the welfare and the values of people from other parts of the world.								
	Processes: Clarifying Values; Analysing Values; Acquiring Values; Judging Values								

Ref: Holland et al, 1985; NSW Department of Education, 1987: Slater, 1982.

Fig. 6: Matrix of Learning/Teaching Strategies

No	Strategies	Time Allocation (Units)
	IN CLASSROOM	
1	Decision making - simulation & games	
2	Computer programs	
3	Role playing	
4	Group work	
5	Lecturettes	
6	Seminar discussions	
7	Debates	
8	Using models and/or case studies	
9	Using AV Media - Slides, film strips	
	- films, TV program	
	- overhead projector	
	- cassettes	
10	Note taking, note making	
11	Reading and interpreting maps	
12	Map and chart making	
13	Laboratory work	
	OUT OF CLASSROOM	
14	Field exercises, traffic survey	
15	Field sketching, Local area mapping	
16	Library research, museum research	
17	Interviewing	
18	Land use mapping	
19	Making video	
20	Town planning authorities	

Ref: NGCC, 1976; Conolly, 1988; Holland et al, 1985

Fig. 7: Matrix of Resource Materials

No.	Resources	Time Allocation Units							
1	Diagrams								
2	Maps - Atlas								
3	- Topographic								
4	- Landsat Image								
5	Newspapers								
6	Periodicals								
7	Documents								
8	Textbooks								
9	Case Studies								
10	Computer Programs								
11	Video Films								
12	Statistics								
13	Graphs								
14	Models - Hardware								
15	- Theoretical								
16	Field								
17	People								
18	Photographs - Slides								
19	Library								
20	Museum								
21	Overhead Transparencies								

Ref: Modified NCCC, 1976.

The level of complexity of geography programs varies considerably between schools. Some school geography staff summarise the essential ideas on one page, such as is indicated in Fig. 8. Other schools prefer the details included in Figs. 9 and 10 with an additional page on resources. Each of these examples are based on goal orientation with the emphasis on knowledge, values and skills. The educational objectives provide a clear indication of what the beginning teacher plans to teach during four weeks of lessons and the instructional objectives state what the students should have learned at the end of the four weeks. These decisions are made at the fourth stage in planning the geography program (see Fig.9).

The fifth stage is concerned with the assessment and evaluation of students' performance and the evaluation of the units in the program to ascertain whether the term, semester or year course achieved the educational objectives and was interesting and relevant to the students.

A range of assessment instruments are available for measuring students' performance. Some of these instruments are: essays and structured response questions; multiple-choice, true/false, and short answer tests; fieldwork reports, worksheets and assignments; questions based on stimulus material; construction and interpretation of maps, graphs and statistics; research projects involving either groups or individuals; lecturettes, verbal reports and debates; audio-visual and pictorial presentations; group activities and simulations role plays and games (see also ideas on assessment in AGTA, Geographical Education, Vol. 6, No. 1, 1989).

The beginning teacher is much better equipped to analyse their own teaching performance and students' achievement of course objectives if students' profiles are kept from the commencement of the course. This approach is well documented in Profiling in Geography (Graves and Naish, 1986). The preparation of each student's profile immediately alerts the teacher to the objectives students find difficult to achieve, in the time available, and should lead to an early modification of the program so that these objectives are reconsidered and consolidated before continuing the course.

In order to ensure that the geography program is appropriate for

Fig. 8: Alternative Approach to Program Format I			
Theme: Interaction of People ~~and~~ IN/WITH the Natural Environment		Completion Date: 10.8.90	Yr 10
Focus Question: Why do people have differing perceptions of a natural resource?			
Objectives	Knowledge: 1. to identify the different perceptions of reality people have of the same natural resource. 2. to learn to evaluate environments for their unique qualities 3. to understand reasons for conflict between conservation and development		
	Values: 1. developing a sensitivity to cultural differences 2. developing a concern for preservation of unique and vulnerable environments.		
	Skills: 1. interpretation of atlas and topographic maps 2. developing problem solving skills 3. writing reports on research findings.		
Concepts: environmental perception, personal space, cultural diversity, fragile environment			Tick when Completed
Contributing Questions: 1. How has technological development and energy demands affected the lifestyle of the people of Saudi Arabia? 2. In what ways has technological development influenced the landscape of the Australian desert? 3. What does conservation mean to you?			
Suggested Learning Strategies: Films of Saudi Arabia and Central Australia; Map work; Fieldwork in Local reserve.			

Fig. 9: Goal-oriented Instructional Unit

Theme: Global Farming Systems

Unit: Intensive Farming Systems in Hong Kong

Class Level: Senior Six

Time Allocation: 4 weeks x 6-40 minute periods per week (24 ~~weeks~~ periods)

Educational Objectives

Knowledge: To develop students' understanding of:

1. an intensive farming system in Hong Kong;
2. the natural impact of drainage, flood, drought, storms, pests and other hazards on this farming system;
3. the cultural impact on the system of
   - 3.1 reclamation, irrigation and conservation projects, and
   - 3.2 farming methods (mechanisation);
4. The interrelationships among natural and cultural elements which affect
   - 4.1 size of farms,
   - 4.2 crop and/or livestock production,
   - 4.3 urban encroachment on farms,
   - 4.4 settlement pattern, and
   - 4.5 population distribution and migration.

Values: To encourage students to analyse and clarify their values.

1. Is farming the best use of this environment?
2. In what ways has urbanisation affected the life styles of farming families?
3. What problems could arise for rural families forced to move into urban centres? Suggest ways of alleviating this problem so as to benefit rural families.

Skills: To develop in students the ability to:

1. read and interpret topographic maps (1:20,000) and aerial photos;
2. use and interpret written materials such as reports, journals and articles on intensive farming systems;
3. construct and test hypotheses concerning problems associated with intensive farming systems; and
4. present material and arguments to solve environmental problems in rural areas in the vicinity of large cities.

Organising Concepts in Unit: intensive farming systems, spatial distribution, association, interaction, change over time, environment, social and economic structures, land rent, cost benefit analysis.

Instructional Objectives: On completion of this Unit students should be able to:

1. describe two or more farming systems;
2. account for the distribution and spatial characteristics of farming systems in Hong Kong;
3. suggest reasons for past and future changes in farming systems in Hong Kong; and
4. recognise linkages between farming systems in Hong Kong and other global systems.

Learning Activities.

Introductory:

1. Broadening students' perceptual experience of intensive farming systems in Hong Kong and in other countries through film, slides and picture interpretation.
2. Guided discussion on perception of this farming system.
3. Reading and discussing skilled observers' descriptions of intensive farming systems.

Developmental:

1. Student collect field data of the changing agricultural landscape in Hong Kong.
2. Developing models of agricultural land use in intensive farming systems.
3. Group projects on
   - 3.1 changing farming landscapes in the northeast of the New Territories;
   - 3.2 role of agricultural products in the import/export trade of Hong Kong.
   - 3.3 irrigation projects in the Kam-tin plain
4. Assignments on instructional objectives.
5. Discussion on linkages and intensive farming systems in Hong Kong and other global systems.

On-going and Integrative:

1. Comparison of intensive farming systems in Asia with other global systems.
2. Comparing intensive farming systems with other global farming systems.

Evaluation

Initial: Investigation of students' present knowledge of Unit topic.

Formative: Evaluation of students' responses to intensive farming systems using, questionnaires, rating scales, and teachers' perception of students' responses. Objective and short answer tests of skills and content; structure essays to assess knowledge and values on selected topics.

Summative: Evaluation of educational objectives.

Fig. 10: Goal-oriented Instructional Unit

Theme: Global Industrial Landscapes

Unit: Factors influencing Industrial Location in Sydney and Bangkok.

Class Level: Senior Six

Case Studies: Sydney and Bangkok

Time Allocation: 6 weeks x 6-40 minute periods per week.

Instructional Objectives: On completion of this Unit students should be able to:

Knowledge:

K1 Explain the differences between processing and fabricating systems of manufacturing.

k2 Discuss the role of manufacturing in economic change

K3 Describe the variables influencing manufacturing location.

K4 Discuss the factors influencing industrial location decisions in cities using Sydney and Bangkok as examples.

K5 Apply theories of industrial location to manufacturing systems in Sydney and Bangkok.

Skills: S1 relates to K1 etc.

S1 Read descriptions of various factory units and classify them into processing and fabricating industries.

S2 Read and interpret statistical tables, graphs, diagrams, maps and models.

S3 Prepare diagrams to demonstrate the factors influencing location decisions in Sydney and Bangkok. Read and interpret maps, graphs, photos and slides.

S4 Read and interpret industrial location models and apply to real situations.

Values:

V1 Evaluate the impact of manufacturing on the quality of the environment in Sydney and in Bangkok.

V3 Should industries which pollute the environment be located in large cities, such as Sydney and Bangkok? Discuss the reasons for your opinion.

V4 Discuss the effects of technological change on environmental quality, on employment patterns as they affect community welfare, and on the future of the region.

Questions: Numbers refer to knowledge objectives e.g. K1

K1 Define processing in a manufacturing system using specific examples.

K1 Explain the differences between processing and fabricating systems.

K2 Describe the possible effects of the establishment of a factory unit in a town

(a) from the point of view of economic change:
(b) from the perception of a home owner near the factory site.

K2 Analyse the spatial changes in the pattern of development of development within a region as manufacturing is introduced.

K3 Describe the major locational problems for a manufacturing firm.

K4 Discuss the factors influencing industrial location decisions for particular firms in Sydney and Bangkok.

K5 Examine the advantages and disadvantages of the

(a) least cost approach (Weberian Theory)

(b) market demand approach (Losch's Theory)

(c) behavioural approach (Pred's Theory)

to industrial location.

Concepts:

Industrial location, distribution, association, movement, energy, economic change, interaction, environmental perception, distance, resources.

the student and achieves the aims of the syllabus there should be an on-going evaluation of the program. Questions the teacher should consider are:

1. Does the structure of the program provide a balanced treatment of the educational objectives of the course?
2. Did students have any difficulties achieving the instructional objectives within the time frame available? Does the program adequately cater for all students?
3. Is the organisation of the program logical in terms of content and learning experiences for students?
4. How effective are the teaching/learning strategies in promoting student interest and awareness?
5. Does the program bring theory and real-world practice together to reflect the applied nature of geography?
6. How effectively is fieldwork integrated with classroom activities?
7. Does the teaching of contemporary issues and events promote a greater awareness of problems and solutions?
8. Are the resources being used both adequate and suitable?
9. Are the selected assessment procedures appropriate for measuring students' achievement of objectives?
10. What are the unintended outcomes of the course?

Conclusion:

Programs are prepared to guide teaching. The writing of a program assists the teacher to interpret the syllabus, or general curriculum guidelines, for a particular group of students so that the educational objectives are translated into realities which can be implemented in the classroom.

Program writing is a professional skill which develops with experience. At the beginning it is time consuming but, when the technique has been learned, it is easy to apply. Most program writing is a cooperative endeavour with the Head of Department the coordinator of activities. Each term the program is evaluated and changes implemented in the program before the next term begins.

Many teachers today who put considerable time into developing their

geography program use it for other purposes. For example: 1. they give their students a statement of what is to be learned, in general terms, for the year's course and, in detail, for the units to be covered in the first term; 2. they provide parents with a brief resume of the course with required assignments and activities; and 3. they share course information with other subject teachers, e.g. mathematics and science, so that overlapping topics can be considered in a logical manner. It is important, also, to consider the theories and information being considered so that there are no errors in fact or in interpretation of theories which may confuse the students as they move from one classroom teacher to the next. For example, the treatment of climatology and geomorphology by a science teacher and then by a geography teacher.

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